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A new species of *Diochus* from Baltic amber (Coleoptera, Staphylinidae, Diochini)

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Abstract

The first fossil of the staphylinine tribe Diochini Casey is described and figured from an inclusion in mid-Eocene (Lutetian) Baltic amber. *Diochus electrus* **sp. n.** is distinguished from its congeners and the diversity of rove beetles (Staphylinidae s.l.) is summarized briefly.

Keywords

Tertiary, Eocene, Lutetian, fossil, Staphylininae, Diochini, taxonomy

Introduction

More so than any other amber deposit in the world, the fossiliferous resin from the blaue Erde of northern Europe has garnered the attention of researchers, artists, and amateurs. For literally millennia Baltic amber has been the focus, if not obsession, of innumerable individuals and as such its included flora and fauna is one of the most

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completely understood paleoecosystems. Despite this fascination and intense activity, there remains huge swaths of the fauna to revise and newly document. Among those groups requiring significant attention are the beetles of the family Staphylinidae (sensu Bouchard et al. 2011). Most species, largely of the subfamilies Scydmaeninae and Pselaphinae, were described more than a century ago by Schaufuss (1888, 1890a, 1890b, 1890c, 1892, 1896) and are in need of revision and figuring, should new material eventually be located (*vide* Appendix). Fortunately, several new works during the last 35 years, particularly the last decade, have added significantly to this fauna and provided a more modern perspective on staphylinid diversity in Baltic amber (*vide* Appendix). Unfortunately, the diverse subfamily Staphylininae has not been recorded formally since Schaufuss (1888) described *Bembicidiodes inaequicollis*, a species more recently considered of uncertain subfamilial affinity (Herman 2001).

In this paper we describe the first fossil species of *Diochus* Erichson from middle Eocene Baltic amber and as the first, definitive fossil staphylinine. The tribe Diochini Casey includes the genera *Antarctothius* Coiffait and Saiz, *Coomania* Cameron, and *Diochus*. The tribe has not received much taxonomic attention and the boundaries between these genera are not clear. Newton (1985) suggested that *Antartoctothius* might be co-generic with *Diochus*, which is the genus with the highest number of species (40) in the tribe. *Diochus* has a worldwide distribution but the majority of species are found in the New and Old World tropics. There are ten species of *Diochus* in the Palearctic region (Smetana 2004; western Palearctic species revised by Assing 2003) and only one in the Nearctic (Smetana 1982). Smetana (1982) noted that *Diochus* is in dire need of systematic revision and that it is extremely hard to differentiate between species.

Material and methods

Measurements were made using an ocular micrometer on an Olympus SZX-12 stereomicroscope and all measurements refer to maximum width or length of a particular structure. Total length is measured from the anterior margin of the clypeus to the posterior margin of abdominal segment VIII. Due to the placement of the fossil in amber, not all typical measurements were possible. Photomicrographs where prepared with a Nikon D1x digital camera attached to an Infinity K-2 long-distance microscope lens.

The age, origin, and biotic diversity of Baltic amber has recently been summarized by Weitschat and Wichard (2010). Material discussed herein is deposited in the Fossil Insect Collection of the Division of Entomology, University of Kansas Natural History Museum, Lawrence, Kansas, USA.

Systematic placement

The fossil is placed in the tribe Diochini (and the genus *Diochus*) based on the following characters (from Smetana 1982): antennae not geniculate; maxillary palpus (P_2

and P_3) finely pubescent; neck narrow, only about a forth as wide as head and frons between antennal insertions truncate. The direct comparison of the fossil described here with *Coomania* was not possible due to the lack of *Coomania* specimens, however, in the published description of *Coomania* (Cameron 1939) the neck is much narrower than in *Diochus*, only a fifth as broad as the head.

Systematic paleontology

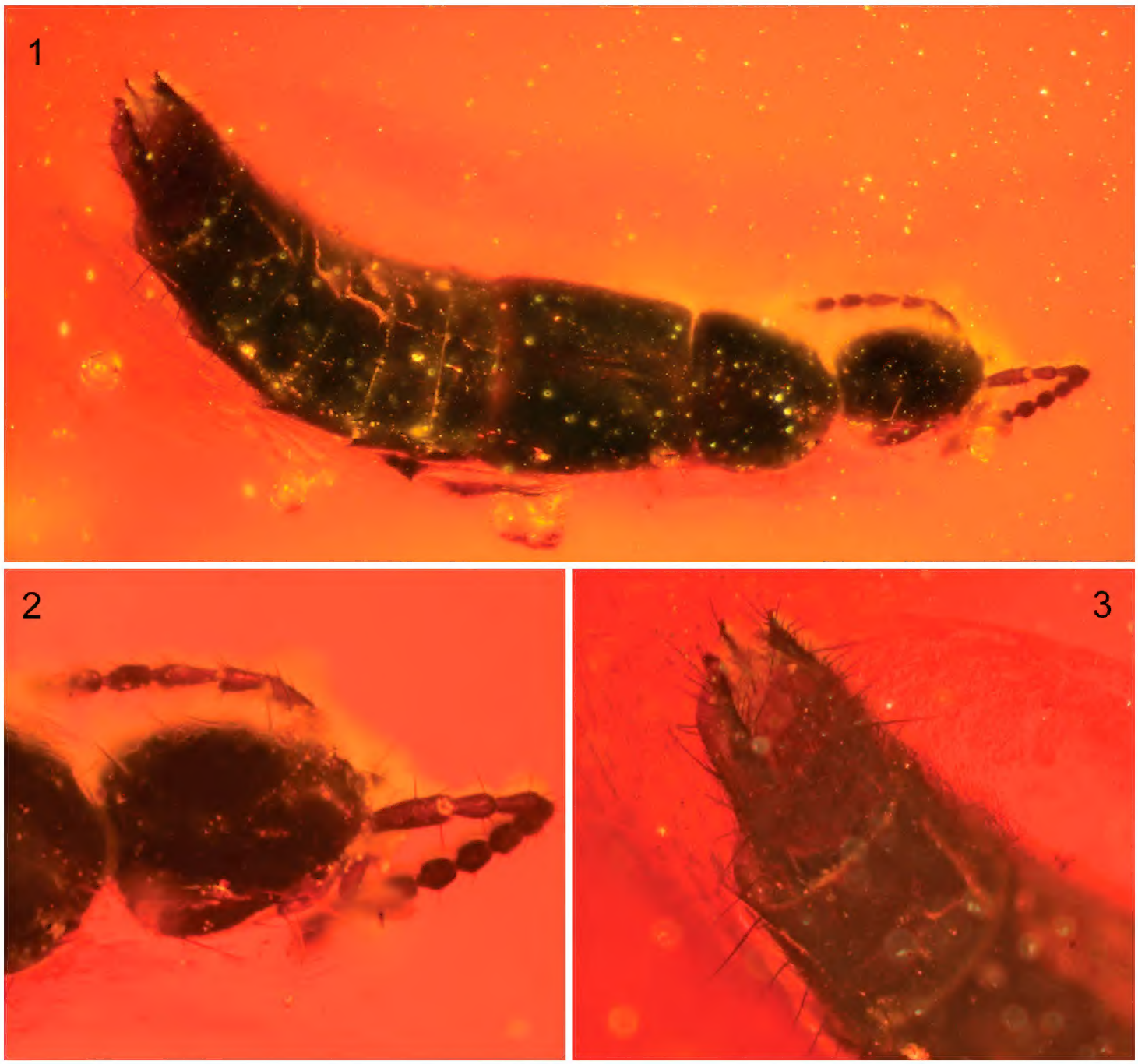
Family Staphylinidae Latreille, 1802
Subfamily Staphylininae Latreille, 1802
Tribe Diochini Casey, 1906
Genus *Diochus* Erichson, 1839

***Diochus electrus* Chatzimanolis & Engel, sp. n.**
urn:lsid:zoobank.org:act:C24A1C8A-B27B-48EC-8100-2FE43C4913E6
http://species-id.net/wiki/Diochus_electrus
Figs 1–3

Holotype. ♀; KU-NHM-ENT, B-244 (Fig. 1); with labels: "Amber: Baltic, middle Eocene (Lutetian), blaue Erde, Northern Europe, KU-NHM-ENT-B244" // "HOLOTYPE *Diochus electrus* Chatzimanolis and Engel, des. Chatzimanolis and Engel 2011". Deposited in Fossil Insect Collection, Division of Entomology, University of Kansas Natural History Museum, Lawrence.

Diagnosis. *Diochus electrus* can be distinguished from otherwestern Palearctic species of the genus by the differences in the relative proportion of elytra to pronotum (elytra longer than pronotum in *D. electrus*; shorter than elytra in other species) and the proportions of the head (head much more elongate in the extant species than in *D. electrus*).

Description. Total length 3.5 mm; body coloration brown to black except antennae somewhat orange and abdominal segment VIII light brown. Head ovoid, length 0.56 mm, width 0.48 mm, slightly longer than wide (Fig. 2); compound eye length 0.18 mm, postoccular region convex, about twice as long as compound eyes; head with large macrosetae near posterior margin; head with transverse microsculpture and sparse small punctures. Antennomeres 1–5 longer than wide; antennomeres 6–10 subquadrate, antennomere 11 longer than wide; antennomere 1 as long as twice length of antennomere 2; antennomere 3 1.5 times longer than antennomere 2; antennomere 4 slightly shorter than antennomere 3; antennomere 5 slightly shorter than antennomere 4; antennomeres 6–9 subequal in length; antennomere 10 slightly longer than previous antennomeres but shorter than antennomere 11. Mouthparts not visible except right maxillary palp; maxillary palpomere I (P_1) not visible, P_2 longer than wide, club-like, about as long as P_3; P_3becoming wider distally; P_4 extremely small, slender, conical, about seven times smaller than P_3. Pronotum subquadrate, wider than head; pronotal length 0.64 mm, width 0.49 mm; anterolateral corners curved ventrally and not vis-



Figures 1–3. Photomicrographs of holotype female of *Diochus electrus* Chatzimanolis & Engel, sp. n. (B-244). **1** Dorsal view **2** Details of head **3** Details of abdominal apex.

ible from above; pronotum smooth with sparsely scattered small, shallow punctures. Elytra longer than pronotum; elytra length 0.75 mm, elytra width 0.67 mm; elytra with dense macrosetae, expanding posteriorly; elytra sculptured as on pronotum. Legs (forelegs not visible) with slender tibiaecovered in long spurs distally; tarsi elongate, metatarsi almost as long as metatibia; metatarsomeres I and II greatly expanded. Abdomen with dense macrosetae (Figs. 1, 3); segment VI longer than preceding segments; segment VII about twice as long as segment V; sternum VIII without any secondary sexual structures.

Etymology. The specific epithet is an adjective derived from the Latin noun for amber (electrum).

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Appendix

Checklist of described Baltic (including Bitterfeld and Rovno) amber Staphylinidae-arranged by subfamily (sensu Bouchard et al. 2011); older records also exist for the subfamilies Euaesthetinae, Micropeplinae, Osoriinae, Oxytelinae, Phloecharinae, Proteininae, and Scaphidiinae but based on unidentified or undescribed material (e.g., Klebs 1910; Larsson 1978; Spahr 1981, Puthz 2006, 2008).

Subfamily Aleocharinae Fleming
- *Adinopsis groehni* Zerche, 1999
- *Aleochara* (*Aleochara*) *baltica* Paśnik & Kubisz, 2002
- *Atheta* (*Datomicra*) *jantarica* Paśnik, 2005
- *Baltioligota electrica* Paśnik, 2005
- *Dictyon antiquus* Paśnik & Kubisz, 2002
- *Electrogymnusa baltica* Wolf-Schwenniger, 2004
- *Leptusa* (*Protoleptusa*) *defuncta* Semenov et al., 2001 [Rovno]
- *Phymatura electrica* Paśnik & Kubisz, 2002

Subfamily Omaliinae MacLeay
- *Pseudolesteua insinuans* Schaufuss, 1890b

Subfamily Oxyporinae Fleming
- *Oxyporus blumenbachii* Gravenhorst, 1806

Subfamily Paederinae Fleming
- *Lathrobium ambricum* Paśnik & Kubisz, 2002
- *Lathrobium balticum* Paśnik & Kubisz, 2002
- *Lathrobium jantaricum* Paśnik & Kubisz, 2002
- *Lathrobium succini* Paśnik & Kubisz, 2002
- *Lathrobium* (*Palaeolobrathium*) *whitei* Abdullah & Abdullah, 1968

Subfamily Pselaphinae Latreille
- *Barybryaxis lata* Schaufuss, 1890a
- *Batrisus antiquus* Schaufuss, 1890a
- *Batrisus pristinus* Schaufuss, 1890a
- *Bythinus foveopunctatus* Schaufuss, 1890a

Bythinus schaufussi Reitter, 1891 (*nom.nov. proB. caviceps* Schaufuss, 1890a)
Bythinus tenuipes Schaufuss, 1890a
Bythinus typicus Schaufuss, 1890a
Ctenistodes claviger Schaufuss, 1890a
Cymbalizon tyroides Schaufuss, 1890a
Dantiscanus costalis Schaufuss, 1890a
Deuterotyrus redivivus Schaufuss, 1890a
Euplectus lentiferus Schaufuss, 1890a
Euplectus mozarti Schaufuss, 1890a
Euplectus quadrifoveatus Schaufuss, 1890a
Euspinoides glabrellus Motschulsky, 1856
Faronus porrectus Schaufuss, 1890a
Faronus tritomicrus Schaufuss, 1890a
Greys conciliator Schaufuss, 1890a
Hagnometopias pater Schaufuss, 1890a
Hetereuplectus retrorsus Schaufuss, 1890a
Monyx spiculatus Schaufuss, 1890a
Nugaculus calcitrans Schaufuss, 1890a
Nugator stricticollis Schaufuss, 1890a
Pammiges spectrum Schaufuss, 1890a
Pantobatrisus cursor Schaufuss, 1890a
Rybaxis glabrella (Schaufuss, 1890a)
Rybaxis patris (Schaufuss, 1892)
Rybaxis veterum (Schaufuss, 1890a)
Tmesiphoroides cariniger Motschulsky, 1856
Tychus avus Schaufuss, 1890a
Tychus radians Schaufuss, 1890a
Tyrus electricus Schaufuss, 1890a

Subfamily Scydmaeninae Leach
Aenictosoma doenitzi Schaufuss, 1892
Clidicus balticus Schaufuss, 1896
Cryptodiodon corticaroides Schaufuss, 1890c
Electroscydmaenus pterostichoides Schaufuss, 1890c
Euconnus fossilis Franz, 1976
Euconnus liedtkei Franz, 1976
Euconnus sucini Franz, 1976
Euconnus wunderlichi Franz, 1983
Hetereuthia elegans Schaufuss, 1890c
Heuretus coriaceus Schaufuss, 1890c
Neuraphes fossilis Franz, 1983
Palaeomastigus helmi Schaufuss, 1890c
Palaeothia tenuitarsis Schaufuss, 1890c
Scydmaenoides nigrascens Motschulsky, 1856

Semnodioceras halticaeforme Schaufuss, 1890c
Stenichnus (*Cyrtoscydmus*) *capucinus* (Schaufuss, 1890c)
Stenichnus (*Cyrtoscydmus*) *carinulatus* (Schaufuss, 1890c)
Stenichnus (*Cyrtoscydmus*) *laticlavus* (Schaufuss, 1890c)
Stenichnus (*Cyrtoscydmus*) *titubans* (Schaufuss, 1890c)
Subfamily Staphylininae Latreille
Bembicidiodes inaequicollis Schaufuss, 1888 (subfamily questioned: Herman 2001)
Diochus electrus Chatzimanolis & Engel, sp. n.
Subfamily Steninae MacLeay
Stenus (*Hemistenus*) *priscus* Benick, 1943
Stenus abraham Puthz, 2010
Stenus archetypus Puthz, 2010
Stenus atavus Puthz, 2010
Stenus avus Puthz, 2010
Stenus groehni Puthz, 2010
Stenus ketura Puthz, 2010
Stenus methusalem Puthz, 2010
Stenus noach Puthz, 2010
Subfamily Tachyporinae MacLeay
Bolitobius groehni Schülke, 2000
Palaeosepedophilus succinicus Paśnik & Kubisz, 2002
Sepedophilus balticus Paśnik & Kubisz, 2002
Tachyporus bicoloratus Paśnik, 2005